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FACT SHEET

ENVIRONMENTAL TOBACCO SMOKE

The first published studies reporting an association between exposure to environmental tobacco smoke (ETS) and chronic disease in nonsmokers appeared in the early 1980s. By 1986, the U.S. Surgeon General concluded that ETS causes lung cancer in nonsmokers, that it adversely affects lung function and causes respiratory symptoms and disease in children, and that separation of smokers and nonsmokers does not effectively minimize nonsmoker exposure to ETS. In addition, ETS exposures have reportedly been associated with increased risks of lung and heart disease in adult nonsmokers, and with the aggravation of preexisting lung and heart diseases (e.g., asthma and angina). ETS also has been described as a cause of allergy and a major contributor to poor indoor air quality. **However, none of these health claims is convincingly justified on a scientific basis.**

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ENVIRONMENTAL TOBACCO SMOKE

While environmental tobacco smoke (ETS) has received much attention in the popular press, the claim that ETS cause disease in nonsmokers is not justified on a scientific basis. The matter, simply stated, has become more political than scientific.

Exposure to ETS:

Published studies indicate that nonsmoker exposure to ETS under normal, everyday conditions is minimal. For example, researchers report that there is little difference in ambient levels of carbon monoxide in smoking and nonsmoking areas of workplaces and public places.[1] Other studies indicate that ETS contributes less than half of the total particles in the air of a typical public place.[2] Nicotine is often used as a marker for ETS exposures because it is unique to tobacco smoke. Typical measurements of nicotine range from an exposure equivalent of 1/100 to 1/1000 of one filter cigarette per hour.[3] This means that a nonsmoker would have to spend from 100 to 1000 hours in an office, restaurant or public place in order to be exposed to the nicotine equivalent of a single cigarette.

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Indoor Air Quality:

Because it is visible and easily identified by its aroma, ETS is often blamed for indoor air quality problems. However, government and private sector studies of "sick buildings" in the U.S. and Canada indicate that ETS is involved in only 2% to 5% of the buildings investigated for complaints about air quality.[4] Indoor air quality problems in "sick buildings" have been traced to inadequate fresh air and poor air filtration. One investigator recently concluded: "Removing the smoker entirely, then, may not affect health and comfort problems in 95% to 98% of sick buildings."[5]

Health Claims:

Lung Cancer:

To date, more than twenty studies examining the possible association between ETS exposures and lung cancer in nonsmokers have been published. The studies are not consistent in either methods or conclusions. Few of the studies report associations which are statistically significant.[6] This means that the data in the overwhelming majority of the studies do not even statistically support an association between ETS exposures and lung cancer in nonsmokers. Moreover, many of the studies are scientifically flawed

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because they fail to consider important issues such as diet, occupational exposures, heredity and exposures to air pollution as potential factors in the development of disease.

Such considerations led a German scientist recently to conclude that "whether passive smoking causes lung cancer is an open question today."[7] After reviewing the published studies on lung cancer and ETS, he further concluded that "there is no consistency, there is a weak association, there is no specificity, the dose-effect relation can be viewed controversially, bias and confounding are not adequately excluded, there is no intervention study, significance is only present under special conditions and the biologic plausibility can be judged [to be controversial]."

Heart Disease:

Published studies on ETS and the risk of cardiovascular disease suggest no clear trends. In 1984, two scientists at a clinical research center in Germany reviewed the literature on the possible role of ETS components in coronary heart disease in nonsmokers. They concluded that "there is little evidence" to suggest that substances found in ETS "may adversely affect the cardiovascular system."[8] Similarly, a group of scientists at an international symposium on ETS in Geneva concluded that "carbon monoxide from environmental tobacco smoke is not important from a

health point of view."[9] Even the U.S. Surgeon General's 1986 Report on ETS conceded that further studies are needed "in order to determine whether involuntary smoking increases the risk of cardiovascular disease."[10]

A 1978 study by Aronow reported that ETS exposure worsened the condition of individuals with pre-existing heart disease.[11] However, this study was severely criticized by a number of scientists[12] and its results have not been successfully replicated by other scientists.[13] In addition, Aronow's work on carbon monoxide and heart disease was challenged and rebuked by a federal regulatory agency in the U.S.[14] Yet this very questionable study is often cited, even today, as support for the claim that there is a link between ETS exposures and heart disease.

Children's Respiratory Disease:

One of the most emotional claims relating to ETS is that parental smoking adversely affects the respiratory health of children. While some studies suggest the existence of an association, others do not. Moreover, recent studies which have examined dampness and overcrowding in the home, poor diet, day-care attendance, access to medical care, etc.[15] suggest that such factors are associated with childhood respiratory health independent of whether or not the parents smoke.

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Allergy and Asthma:

One of the most common complaints heard about ETS exposure is that individuals are allergic to tobacco smoke. Some individuals claim to be annoyed or irritated simply by the sight or smell of ETS, but scientific research reveals that there is no tobacco smoke allergy per se, in that specific allergens have not been identified in tobacco smoke.[16] Thus, while some individuals for whatever reason may react to ETS exposures, such responses are not specific sensitizations to tobacco smoke.

Similarly, studies which have assessed the influence of ETS exposures on asthmatics are not conclusive. While two studies are suggestive of a genuine response to ETS,[17] four studies report no objective changes in asthmatics even after prolonged, heavy exposure to ETS.[18] Also, in the two studies reporting an effect from ETS exposures among asthmatics, researchers were unable to rule out the influence of emotional and psychological stress on the reactions of their patients.

Conclusion:

Claims regarding the associations of ETS with lung cancer and heart disease in adults and pulmonary function decrements and

respiratory disease in children, are all based primarily upon epidemiological studies. The reported relative risks in such studies are very low, rarely above 3.0. It is argued that such low risks, even if real, cannot be detected by ordinary epidemiological methods. Moreover, few of the studies' risk calculations achieve statistical significance, and thus, they do not challenge the hypothesis that there is no correlation between ETS exposures and chronic disease. Without exception, the studies neglect to consider important confounding variables such as lifestyle, diet, genetic factors, exposure to indoor or outdoor pollutants and occupation. In studies in which such variables have been independently isolated and properly considered, the reported association between ETS and chronic disease cannot be discerned.

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WHAT IS ETS?

CLAIM: A NONSMOKER'S EXPOSURE TO TOBACCO SMOKE IS CLEARLY "PASSIVE SMOKING."

RESPONSES:

- The phrase "passive smoking" is a misnomer -- and a rather misleading one at that. Antismokers must be using the phrase for political reasons because it is certainly inappropriate from a scientific standpoint. A nonsmoker does not inhale qualitatively or quantitatively what a smoker does. The same is true for the phrase "involuntary smoking." Phrases like "passive" or "involuntary" are no more appropriate when applied to a nonsmoker's exposure to tobacco smoke than they would be if applied to that same individual's exposure to the smoke from a barbecue grill or a fireplace. The usage of such terms reveals the extent to which some members of the antismoking community are prepared to inject emotion into the scientific debate.

- The tobacco smoke to which the nonsmoker is exposed is qualitatively and quantitatively different from mainstream smoke. It is a highly diluted, aged and chemically altered mixture of sidestream and exhaled mainstream smoke. This mixture changes as it ages and mixes with

other substances present in room air. Quantitatively, the constituent levels found in such tobacco smoke are diluted from 100 to 1000 times the levels in mainstream and sidestream smoke.(1)

- There are obvious differences between active smoking and the nonsmoker's exposure to tobacco smoke. Recent studies have reported that a nonsmoker in a typical public place is exposed to the nicotine equivalent of one 1/100 to 1/1000 of a cigarette per hour.(2)

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DRAFT

SMOKING IN THE WORKPLACE: VENTILATION

CLAIM: CIGARETTE SMOKE IS RESPONSIBLE FOR "SICK BUILDING" COMPLAINTS.

RESPONSES:

- Because it is visible and easily identified by its aroma, tobacco smoke is often blamed for indoor air quality problems. Government and private studies of "sick buildings" in the United States and Canada report, however, that tobacco smoke may be involved in only two percent to five percent of the buildings investigated for complaints about air quality.(1) This suggests that even a total smoking ban is not likely to affect comfort problems in 95 to 98 percent of "sick buildings."(2)

- The majority of indoor air quality problems in "sick buildings" have been traced to inadequate fresh air and poor air filtration. Because the visibility of tobacco smoke may be an indicator of inadequate ventilation, the prohibition of smoking serves to mask the real reason for poor indoor air quality -- lack of proper ventilation. In addition, concentrating on tobacco smoke ignores the fact that adequate ventilation should always be provided

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in any enclosed space, regardless of whether or not smoking is permitted.

- In 1981, the American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE) issued a ventilation standard for public places (ASHRAE 62-1981). The Standard established two levels of ventilation, one for areas in which smoking was permitted, and another substantially lower rate for areas where smoking was prohibited. The Standard was recently revised and reissued (ASHRAE 62-1989) with one prescribed ventilation rate, regardless of whether smoking was permitted or not. The decision to reject separate ventilation rates for smoking and nonsmoking areas was influenced by two areas of research: (1) The amount of ventilation required to remove indoor contaminants produced by humans, namely carbon dioxide and body odor, is also sufficient to remove typical amounts of ETS; and (2) Ventilation rates for nonsmoking areas under ASHRAE 62-1981 were found to be inadequate and permitted airborne substances to increase, even in the absence of ETS.

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DRAFT

PUBLIC SMOKING AND HEALTH

CLAIM: SMOKING SHOULD BE BANNED IN PUBLIC PLACES BECAUSE TOBACCO SMOKE CAUSES DISEASE IN NONSMOKERS.

RESPONSES:

- This assertion cannot be justified on health grounds. Much of the limited available research which has been used to promote smoking bans has been criticized by independent scientists and at international conferences.(1,5,6,10)

- The scientific literature frequently stresses that the evidence associating tobacco smoke with health effects in nonsmokers is inconsistent and inconclusive and that much more research needs to be done.(1-7) It is not surprising then, that the co-organizer of a recent international conference on this subject in Montreal, Canada, remarked that "it appears premature to take any sort of regulatory action" on this issue at this point.(1)

- A participant at another recent international forum, on indoor air quality, concluded: "Whether a

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real risk [from exposure to tobacco smoke] is involved which in the future can be demonstrated on the basis of measurable results remains an open question. In light of this, health officials should concentrate on more significant environmental problems in the long term interest of society rather than wasting time and money on trivial issues."(5)

- More than 20 published studies have examined the possible association between exposure to tobacco smoke and lung cancer in nonsmokers. Although several of those studies report statistically significant associations, the great majority do not report <u>even</u> a statistically significant association between exposure to tobacco smoke and lung cancer in nonsmokers.(2,8)

- Many of the studies on tobacco smoke exposure and lung cancer in nonsmokers, including those that report a statistical association, are of questionable reliability because they failed to consider other potential factors in disease causation, such as diet, occupational and home exposures to pollutants and heredity. Recent studies have reported that these factors are associated with lung cancer in nonsmokers.(9)

- Although some people have suggested that exposure to tobacco smoke may increase the risk of cardiovascular disease in nonsmokers, scientists continue to question what role, if any, tobacco smoke constituents have in the possible development of heart disease.(3,10) Even the 1986 U.S. Surgeon General's Report, which focused exclusively on exposure to tobacco smoke and disease in nonsmokers, conceded that further studies were needed "in order to determine whether involuntary smoking increases the risk of cardiovascular disease."(11)

- Available data relating respiratory disease in adults and tobacco smoke exposure are weak -- no relationship has been conclusively demonstrated.(4)

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DRAFT

SMOKING IN THE WORKPLACE: ACCOMODATION

CLAIM: EXPOSURE TO TOBACCO SMOKE AT WORK IS HARMFUL TO NONSMOKERS.

RESPONSES:

- This claim is not justified on a scientific basis. The matter, stated simply, has become more political than scientific.

- Measurements taken in offices, workplaces and public places indicate that the contribution of tobacco smoke to the air we breathe is minimal.(1) For example, typical nicotine measurements (which are particularly revealing because nicotine is unique to tobacco smoke) range from an exposure equivalent of 1/100 to 1/1000 of one filter cigarette per hour.(2) In other words, a nonsmoker would have to spend from 100 to 1000 hours in an office, restaurant or public place in order to be exposed to the nicotine equivalent of just one cigarette.

- Other researchers who have measured tobacco smoke constituents in offices indicate that simple separation of smokers and nonsmokers effectively minimizes such exposures.(3)

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- A 1980 report which concluded that nonsmokers exposed to tobacco smoke at work for 20 or more years had reduced function of the small airways compared to nonsmokers not so exposed(4) still receives considerable attention, although it was heavily criticized for questionable data acquisition and analysis.(5) In contrast, a more recent study of 1,351 German office workers reportedly found "no evidence" that everyday exposure to tobacco smoke in the office or at home leads to an essential reduction of lung function in healthy adults.(6)

- One of the most widespread beliefs, especially in the workplace setting, is that some nonsmokers are "allergic" to tobacco smoke. Scientific researchers, however, have not identified specific allergens in tobacco smoke.(7) Thus, while some individuals may react to the sight or smell of tobacco smoke, this does not mean that they are experiencing an "allergic" reaction to it.

- Since the claim that exposure to tobacco smoke causes disease in nonsmokers is not scientifically justified,(8) the real issue regarding the "right" to smoke-free air is whether or not smoking should be prohibited because some people consider it to be an annoyance or nuisance.

Regulating a behavior such as smoking merely because some see it as an annoyance has undesirable consequences. Numerous individual behaviors could fall into the category of "annoyances," and to demand restrictions on all those potentially "annoying" behaviors is "to call for government regulation of everything." [Emphasis Added.](9)

- Such regulations also reject the real possibility that people can work things out among themselves and may place a minority of individuals in the position to dictate what is "right" for everyone.

- The alternative to intrusive regulation is good manners, common courtesy and cooperation between smokers and nonsmokers. This alternative preserves the delicate balance of individual rights and allows for accommodation of everyone's desires.

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